The invention relates to the technical domain of machines moving receptacles in front of at least one, and more generally a series of receptacle checking and/or inspection stations.

One particularly advantageous application of said invention is in the domain of checking or inspection of transparent or translucid receptacles, for example such as glass bottles, pots or jars.

In this technical domain, a machine moving receptacles in front of different checking stations is usually provided with a frame equipped with a drive system consisting of endless belts installed facing each other, so as to define a path for gripping receptacles and moving them from one end of the belts to the other. During said movement, these receptacles supported on the frame pass in sequence in front of different check and/or inspection stations, usually optical stations. Since said type of machine is designed to move different diameters of receptacles, the belts are installed free to move away from each other or towards each other so that the width of the receptacle gripping and displacement path can be adjusted.

Conventionally, said type of machine is included on a receptacle conveyor path forming part of a manufacturing and/or packaging line. Therefore, the conveyor line needs to be interrupted so that a displacement and checking machine can be inserted, as described above. Industrial and particularly economic constraints make it essential that the size of the displacement and checking machine should be as small as possible, while including as many detection stations as possible. The size of the means used to move different sizes of receptacles is non-negligible, which limits the number of checking stations that can be installed, or makes it necessary to install a large number of mechanical, electrical and optical equipment units in a small space. In particular, said small amount of space makes it difficult to carry out repair, maintenance or cleaning work, for example when receptacles break and make the various components of the machine dirty.

The state of the art also includes a receptacle conveying machine comprising a first single movement path section and a second multiple movement paths section, as divulged in patent application EP 0 897 760.

Said type of machine comprises a deviation conveyor shaped so as to transfer receptacles from the first movement path section to the second multiple paths movement section.

Said deviation conveyor is designed so that receptacles are suspended as they are moved, without being supported on their bottom.

Said type of deviation conveyor is installed in parallel with the main conveyor such that receptacles follow a non-linear path, which limits the receptacle displacement speed and complicates handling of non-cylindrical receptacles. Therefore, said type of machine is not suitable for insertion on a conveyor line forming part of a manufacturing and/or packaging line.

Therefore, there is a need for such a machine designed for the displacement of different sizes of receptacles over a limited length of a conveyor line, leaving the receptacle displacement environment free, so that as many check or inspection stations as possible can be installed.

Therefore, the purpose of the invention is to overcome the disadvantages mentioned above by describing a compact machine designed to be integrated on a conveyor line, such that different sizes of receptacles can be moved in front of a series of detection and/or checking stations.

Another purpose of the invention is a machine designed to facilitate access to the environment of the receptacle displacement area.

In order to achieve said objective, the machine according to the invention comprises:

- a lower frame, supporting a front half-carriage and a back half-carriage extending along longitudinal planes parallel to each other, each half-carriage comprising:
  - a motorised device driving at least one belt in rotation, the motorised drive device being located at a first end of the half-carriage,
  - at least one return device for at least one belt, located at the second end of the half-carriage,
  - at least one first endless drive belt installed between the motorised drive device and the return device, with one strand placed at a distance from the strand of the belt supported by the other half-carriage so as to delimit a receptacle gripping and movement path between them.

According to the invention:

- the lower frame has at least two transverse sides, one of which has a passage compartment for the end of a receptacle input conveyor that cooperates with a return head on the input side installed on the frame, while the other transverse side has a passage compartment for the end of a receptacle output conveyor that cooperates with a return head on the output side installed on the frame, and cooperating with the return head on the input side to delimit a volume interrupting the conveyance, each transverse side being provided with a linear guide system extending on the outside of the conveyance interruption volume,
- the machine comprises:
  - a mobile carriage supported by linear guide systems and composed of the front half-carriage and the back half-carriage, each half-carriage comprising a rigid bridge installed at each end, and sliding on the linear guide systems,
  - and a displacement system moving one half-carriage away from or towards the other half-carriage located outside the conveyance interruption volume.

According to one preferred characteristic of the embodiment, each half-carriage comprises a geared motor installed on the centre-line of the motorised drive device.

According to one characteristic of the embodiment, the machine comprises:

- a second return device for a belt, supported by the rigid bridge and being located at the second end of the said bridge and extending superposed from the first return device, each return device being composed of a pulley,
- a second endless drive belt between the motorised drive device and the second return device with one strand of the belt passing in front of a bearing plate supported by the rigid bridge and at a distance from a strand of the second belt supported by the other half-carriage,
- and a common drive drum driving the first and second belts.

Another purpose of the invention is a machine comprising a protection cladding and an access door so that an operator can use the man-machine interface, just as well in the open and closed position of the door.

In order to achieve said objective, the access door comprises a chassis delimiting an opening and equipped with displacement guide means for at least one mobile panel between a closed position in which the front of the mobile panel at least partly closes the opening, and an open position in which the mobile panel is located at the side of the opening. According to the invention, the mobile panel comprises:

- a reception structure for a man-machine interface for which the façade is accessible when the mobile panel is in the closed position,
- and reception structure displacement means assuring that when the mobile panel is in the open position, the façade of the man-machine interface is moved towards the opening so that an operator placed in front of the opening can access the opening and the man-machine interface at the same time.

According to a first variant of embodiment, the reception structure displacement means are composed of displacement guide means that slide and pivot the mobile panel, thus ensuring that the mobile panel façade is facing the opening when the mobile panel is in the open position.

According to a second variant of embodiment, the reception structure displacement means are composed of means capable of pivoting the man-machine interface ensuring that the façade of the man-machine interface is accessible when the mobile panel is in the closed position or the open position.

Various other characteristics will become clear after reading the description given below with reference to the attached drawings that show different embodiments of the object according to the invention as non-limitative examples.

**Fig. 1** is a perspective view of a machine according to the invention in the door closed position.

**Fig. 2** is a view similar to **fig. 1** but shown with the door in the open position.

**Fig. 3** is a front elevation view of a machine according to the invention without a door.

**Fig. 4** is a cross-sectional view in elevation taken approximately along lines **A-A** in **fig. 3**, of the machine equipped with a door in the open position.

**Fig. 5** is a perspective view of the lower frame forming part of the machine according to the invention.

**Fig. 6** is a perspective view of the mobile carriage forming part of the machine according to the invention.

**Fig. 7** is a cross-sectional view of the mobile carriage shown in **fig. 6**.

**Fig. 8** is a detailed partial view showing the characteristics of the machine according to the invention.

**Fig. 9** and **10** are diagrammatic views of another example of how a door comprising a mobile panel can be installed on a machine.

As shown more precisely in **fig. 1** to **4**, the subject of said invention relates to a machine **1** capable of moving receptacles (not shown) of all types, such as bottles, jars, pots, in front of at least one and more generally a series of receptacle checking and/or inspection stations **Pi**, some components of which are shown in **fig. 2**. Each checking and/or inspection station comprises components such as supports, sensors, light sources, etc., in a known manner. Checking and/or inspection stations are not described more precisely since they are not included in the invention and are well known to those skilled in the art.

Said machine **1** will be inserted on a receptacle conveyance line such that on the input side of the machine **1,** it comprises a conveyor **2** bringing receptacles to the machine **1,** and on the output side a conveyor **3** removing receptacle from the machine **1**. Conventionally, the machine **1** according to the invention will accept receptacles brought in by the conveyor **2** and the displacement of receptacles as far as the evacuation conveyor **3**.

As shown more particularly in **fig. 5**, the machine according to the invention comprises a lower frame **5** delimiting a supporting frame **6** with two longitudinal sides **7** and two transverse sides **8**, all in respect of the receptacle displacement plane **D**. Preferably, the supporting frame **6** is equipped with four stands **9** advantageously adjustable in height by any known means. Preferably, the transverse sides **8** are adjustable in length such that the machine **1** has an adjustable depth. This is possible because the transverse sides **8** are made of telescopic elements;

Each transverse side **8** has a passage compartment **11, 12** for the end of a receptacle input conveyor **2** and output conveyor **3** that are only shown diagrammatically in **fig. 3**. Each input conveyor **2** and output conveyor **3** will cooperate with a return head, on the input side **13** and the output side **14**, respectively installed on the lower frame **5**. Conventionally, each conveyor **2, 3** is made using an

endless conveyor belt fitted on a pulley **16** forming part of a return head **13**, **14**. Each pulley **16** is installed on a clevis **17** supported by a transverse side **8** of the lower frame **5**. Therefore, it must be understood that the lower frame **5** delimits a passage compartment **11, 12** starting from each transverse side **8**, in other words it delimits a volume in which a return head **13**, **14** can be installed and in which a conveyor **2, 3** and receptacles carried by the conveyors can pass. Note that the return heads **13**, **14** delimit a conveyance interruption volume **V**, in other words between conveyors **2**, **3**, forming the conveyance path. The width of said conveyance interruption volume **V** is the distance between the two return heads **13**, **14**, its depth is sufficient so that the largest diameter receptacle can pass, and its height is sufficient so that the tallest receptacle can pass.

According to one characteristic of the invention, each transverse side **8** is provided with a linear guide system **21** extending outside the conveyance interruption volume **V**. In the example shown, the guide systems **21** are formed by linear guide rails installed parallel to each other along a direction transverse to the displacement plane **D** of the receptacles passing through the return heads **13** and **14** of the conveyors **2, 3**.

As shown in **fig. 6,** the machine according to the invention comprises a mobile carriage **23** supported by linear guide rails **21**. The mobile carriage **23** is composed of a front half-carriage **24** and a back half-carriage **25,** in the front and back of the machine **1**. The half-carriages **24**, **25** are symmetric about the displacement plane **D**.

Each half-carriage **24**, **25,** comprises a rigid bridge **26** installed at each end and sliding on the linear guide rails **21**. Each rigid bridge **26** of the half-carriages **24**, **25** is located in a longitudinal extension plane **E** parallel to the displacement plane **D** of the bottles (**fig. 7**).

According to one preferred embodiment, each rigid bridge **26** is formed from a horizontal beam **27** supported at an upstream end by a support arm called the upstream support arm **28**, and at a downstream end by a support arm called the downstream arm **29**. Each support arm **28**, **29** is provided with a means of cooperation with the linear guide system **21**, such as a sliding pad **31** cooperating with a linear guide rail **21**.

According to a preferred embodiment shown in the figures, each support arm **28**, **29** is composed of a bracket with a vertical leg **32** connected to the horizontal beam **27** and a horizontal leg **33**. The horizontal legs **33** in a particular rigid bridge **26** are installed top to bottom and face the transverse side **8** adjacent to the lower frame **5**. Each rigid bridge **26** formed from a horizontal beam **27** extended by a bracket at each end is generally in the shape of an omega.

According to one preferred embodiment, each rigid bridge **26** is fitted with an upright **34** connected to the end of the horizontal leg **33** opposite the end to which the vertical leg **32** is connected, at each support arm **28**, **29**. Each upright **34** that is vertical and approximately parallel to a vertical leg **32** is fitted with a sliding pad **31** at its base.

As can be seen more precisely in **fig. 6**, each upright **34** of the front half-carriage **24** installed facing an upright **34** of the back half-carriage **25** is installed at a distance from the other upright, the two uprights delimiting part of the straight transverse section of the passage compartment **11**, **12**. Said part of the passage compartment **11**, **12** extends approximately over a length equal to the length delimited by the horizontal legs **33** so as to form an assembly volume for a return head **13**, **14**.

Each half-carriage **24**, **25** also comprises a motorised device **37** driving at least one endless belt **38** in rotation, and in the example shown two endless belts. Each motorised drive device **37** is supported by the rigid bridge **26** located at a first end, namely in the example shown, the upstream end of the said bridge **26**, such that the motorised devices **37** are located outside the conveyance interruption volume **V**. Advantageously, each half-carriage **24**, **25** comprises a geared motor **39** installed on the centre-line of the motorised drive device **37**, preferably composed of a drum or a drive sprocket common to the two endless belts **38**. Therefore each drive drum **37** is in line with a geared motor **39**, which limits their size. In the example shown, the motorised drive devices **37** are installed in the volume delimited by and between the upstream support arm brackets **38**. More precisely, each drive drum **37** is approximately along the same line as an upright **34** over a height approximately the height of the vertical leg **32** of a support arm **28**, each geared motor **39** installed along the line of a drive drum **37** projecting from the vertical leg **32** of the support arm **28**. Note that the endless belts **38** extend over a limited length superposed with

the input side conveyor **2**, such that the receptacles brought in by the conveyor **2** can be handled by the belts **38**.

Each half-carriage **24, 25** also comprises at least one return device **41** for an endless belt **38**; in the example shown there are two of these return devices. The return devices **41** of each half-carriage are supported by the rigid bridge **26** of the said carriage, and are located at the output end of the said bridge opposite the upstream end equipped with the drive drum **37**, such that the return devices **41** are located outside the conveyance interruption volume **V**. Preferably, each return device **41** is composed of a return pulley. In one example preferred embodiment, the return devices **41** are installed in the volume delimited by and between the brackets of the output side support arms **29**. Therefore the return pulleys **41** are approximately vertically above the surface generated by the horizontal legs **33** of the output side support arms. Therefore the endless belts **38** extend over a limited length superposed with the conveyor **3** on the output side, such that the receptacles displaced by the endless belts **38** are picked up by the evacuation conveyor **3**, at the return devices **41**. The spindle of the return heads **13, 14** of the conveyors **2, 3** are thus located at the same level, or preferably within the interval delimited by the centre line of the motorised displacement device **37** and the spindle of the return pulley **41**. Therefore, the receptacles will move between the motorised displacement device **37** and the return pulleys **41** along a displacement direction represented by the arrow $\mathbf{F_1}$. Obviously, the direction of movement of the receptacles (from left to right on the drawings) may be in the direction opposite to that shown (by making a machine symmetrical with the machine described).

Thus, each half-carriage **24, 25** comprises at least one endless belts **38**, each of them being installed between the motorised drive device **37** and a return pulley **41**; in the example shown, there are two endless belts. Note that the two strands of each endless belt **38** extend on each side of the rigid bridge **26**, in other words more precisely the beam **27** and the vertical leg **32** of each support arm **28, 29**. Therefore, each endless belt **38** surrounds a rigid bridge **26** supported at its base by the lower frame **5** such that each endless belt **38** can be put into place or removed from the motorised drive device **37** and from the return device **41** from the top part of the half-carriages **24, 25**.

Each endless belt **38** in a half-carriage has one strand along a line at a distance from a strand of an endless belt **38** carried by the other half-carriage, so as to delimit a receptacle gripping and movement path **43** between them. Each half-carriage **24, 25** is equipped with at least one bearing plate **47**, each running behind a strand of a belt **38**, and between the motorised drive device **37** and a return pulley **41**, so as to define the gripping path **43**; there are two of these bearing plates in the example shown.

According to one preferred embodiment, each bearing plate **47** is fitted with a return pulley **41** at its end installed on at least one, and preferably two guide slides **49** along a vertical direction and supported by the rigid bridge **26**. Each bearing plate **47** is controlled in vertical translation on slides **49** using a control device **50** that regulates the height of each endless belt **38**. Said type of adjustment gives optimum positioning of belts on receptacles as a function of their shape and/or their size. For example, each bearing plate **47** is moved by a manual control **50** acting on a screw-nut type system.

According to one preferred manufacturing characteristic, each motorised drive device **37** associated with a geared motor **39** forms a traveller installed free to slide on a rigid bridge along a direction approximately parallel to the direction of movement $\mathbf{F_1}$ so that the endless belts **38** can be assembled and disassembled. Each motorised drive device **37** is provided with a support and guide bearing **52** also supporting the geared motor **39**. Said type of support and guide bearing **52** is provided with a slide **53** capable of moving in translation inside a guide **54** supported by the top end of the vertical leg **32** of the input side support arm **28**. Said type of mobile traveller is locked in position by a belt tensioning system **56** locking the traveller in the belt tensioned position. For example, the mobile traveller tensioning and locking system is of the toggle fastener type. Furthermore, each return device **41** is installed on a bearing plate **47** by means of a system **57** for tensioning an endless belt **38**. Said type of tensioning system **57** may be made by a spring type system to accommodate variations in the length of endless belts **38**.

The machine **1** according to the invention also comprises a system **61** for moving one half-carriage **24** away from or towards the other half-carriage **25**. Said type of displacement system **61** is located outside the conveyance interruption volume **V** so that access to the said volume is left free.

According to one preferred embodiment, the displacement system **61** consists of two screw-nut systems, each system installed between the adjacent ends of the two rigid bridges **26** of the two half-carriages **24**, **25**. As shown in **fig.** 7, each screw-nut system comprises a threaded rod **63** that at least partly cooperates with a first nut **64** installed in each upright **34** of the support arm of the front half-carriage **24** and with a second nut **65** installed in each upright **34** of the support arm of the back half-carriage **25**. The nuts **65** fitted on the back half-carriage **25** have a thread in the direction opposite to the direction of the nuts **64** of the front half-carriage **24**, such that rotation of the threaded rods **63** in a particular direction causes the two half-carriages to move towards each other or away from each other. Note that the threaded rods **63** move into the volume of the passage compartments **11**, **12**, without hindering the displacement of receptacles, since the threaded rods **63** are inserted between the strands of the conveyors **2**, **3**.

The movement of the two threaded rods **63** is synchronised by a transmission **66**, for example a chain transmission, extending parallel to the longitudinal extension plane **E**. In the example shown, the transmission **66** is composed of a chain **67** engaged on two gears **68** fixed on the ends of each threaded rod **63** projecting from the rigid bridge **26** of the back half-carriage **25**. One of the threaded rods **63** is provided with a rotation control device **69**, for example such as a handle, enabling simultaneous rotation of the two threaded rods **63**, due to the transmission **66**. In said example of embodiment, the system **61** controlling movement of the half-carriages towards or away from each other controls simultaneous and identical displacement of the two half-carriages **24**, **25** that remain centred about the displacement plane **D** along the middle of the gripping and displacement path **43** of the receptacles.

According to one variant of embodiment, the system **61** controlling movement of the half-carriages towards or away from each other controls movement of one of the half-carriages with respect to the other kept in the fixed position. In this respect, each screw-nut system is provided with a device for selecting the method of moving the half-carriages with respect to each other, namely a centred displacement or an offset displacement from the displacement plane **D**. Said type of selection device declutches one half-carriage with respect to the threaded control rods **63**. for example, the nuts of a half-carriage, for example the back half-carriage,

are provided with a solidarisation pin with respect to the upright **34**. Said solidarisation pin is removable such that the nuts are installed free to rotate. When these solidarisation pins are withdrawn, the rotation of the threaded control rods **63** causes free rotation of the nuts, such that the corresponding half-carriage does not move.

According to another preferred embodiment of the invention, the lower frame **5** is equipped with a longitudinal support plate **80** installed free to slide on two cross pieces **81** supported by the longitudinal sides of the frame and extending parallel to the transverse sides **8**. The plate **80** that extends at a distance from the rigid bridges **26** will support the elements forming part of the checking and/or inspection stations of receptacles carried by the endless belts **38**. For example, these elements may be composed of supports, lighting sources, optical sensors, etc. The sliding assembly of said support plate **80** enables a complete displacement of all devices supported by it. Preferably, said support plate **80** is provided with means of locking it in position on the cross pieces **81**. According to one advantageous embodiment, the support plate **80** is connected to a curtain, shutter or mat (not shown) wound around a drum installed on the longitudinal back edge **7** of the frame. It must be understood that between the back longitudinal edge and the support plate **80**, the curtain forms a reception or direction guidance mat for different objects that could fall from the machine, for example such as glass debris.

According to another preferred characteristic of embodiment, the machine **1** comprises an upper frame **90** supported by the lower frame **5** and made of four uprights **91** supported on the supporting frame **6** of the lower frame **5**. The four uprights **91** are connected at the top part by a frame **92** designed to support a storage compartment **93** provided with an access door **95** on the façade. Said type of compartment **93** is adapted to contain all electrical and electronic equipment necessary for operation of the machine and the control stations **Pi**.

The two back uprights **91** support one or two back longitudinal beams **97**, extending horizontally and designed to support elements forming part of the checking and/or inspection stations **Pi**. Preferably, these support beams **97** are installed on the upper frame **90** on transverse slides controlling their movements towards and away from the longitudinal extension plane **E** in which they are located.

As should be clear from the above description, the machine **1** according to the invention is compact, and there is a free space around the conveyance interruption volume **V**, shown diagrammatically as reference **L** in **fig. 3** and **4**. Therefore, it must be understood that the structure of machine **1** is designed to facilitate access around the conveyance interruption volume **V**, so that the maximum number of checking and/or inspection stations **Pi** can be placed in it. The drawings quite clearly show that said machine **1** has a maximum free space **L** around the conveyance interruption volume **V**, and also fulfils its function of handling and moving receptacles.

As can be more clearly seen in **fig. 1** and **2**, the machine **1** according to the invention preferably comprises a protection cladding **100** and an access door **101**. The protection cladding **100** consists of side panels **102** and **103** supported by the transverse sides **8** of the lower frame **5** and the upper frame **90** in which openings are formed corresponding to the passage compartments **11**, **12** for the receptacle input conveyor **2** and the receptacle output conveyor **3**. The protection cladding **100** also comprises a series of back panels **104** cladding the back of the machine. The machine **1** also comprises a chassis **110** on the façade delimiting an opening **111** through which the machine can be accessed. Said opening **111** is opened or closed using a door **101** according to the invention, and corresponding to a pivoting flap **112**, in the example shown. In the example shown in the drawings, the door **101** comprises a first mobile panel **120** installed hinged to a second mobile panel **121**.

According to one characteristic of the access door **101** according to the invention, the first mobile panel **120** comprises a reception structure **122** for instrumentation and/or control means for controlling the machine **123**. These instrumentation and/or control means **123** make up a man-machine interface and are in the form of a keyboard, a screen, a control desk, a mouse, etc. Said man-machine interface **123** is provided with a façade that is easily accessible from the façade **124** in the first mobile panel **120** when it is in the position to close the opening. As is quite clear in **fig. 2**, the thickness of the first mobile panel **120** is preferably such that instrumentation and/or control means **123** can be installed. Consequently, the first mobile panel **120** has a back wall **125** and the façade wall **124** is at a distance from said back wall, and at least one housing **127** delimited by the side plates **128** connected to a plane wall **129** is formed in said façade wall. The back wall **125** is connected to the façade wall **124** through two outer sides **131**, such that the first

mobile panel **120** forms a closed box within the thickness of which the man-machine interface **123** is installed.

According to another characteristic of the access door **101**, the chassis **110** is fitted with displacement guide means **140** for the mobile panels **120**, **121**, so as to move the mobile panels between a closed position in which the façade **124** of the first mobile panel **120** at least partly closes the opening (**fig. 1**), and an open position in which the mobile panels **120**, **121** extend laterally from the opening **111**.

According to another characteristic of the invention, the mobile panel **120** comprises reception structure displacement means **122** adapted so that when the mobile panel is in the open position, the façade of the man-machine interface **123** is facing towards the opening so that an operator in front of the opening **111** can access the opening and at the same time access the man-machine interface **123**. Therefore, it must be considered that when the door is in the closed position, an operator can access the instrumentation and control means **123** without them taking up any space surrounding the machine **1**. When the opening **111** is in the open position, an operator in front of the opening can access instrumentation and/or control means **123** while viewing the inside of the machine without changing position, so that for example he can observe the result of controls made on the man-machine interface **123** at the same time. Furthermore, there is no limit on access to the opening **111**, except for the thickness of the mobile panels **120**, **121**.

In the preferred embodiment shown on the drawings, the reception structure displacement means **122** are composed of means **140** of guiding movements of the mobile panel that slide and pivot the mobile panel **120** such that when the mobile panel is in the open position, the façade **124** of the mobile panel is facing the opening **111**.

In the example embodiment in which there is one door with two mobile panels (**fig. 1**, **2**, **4** and **8**), the sliding and pivoting guide means **140** consist of at least one support and guide rail **145** installed on the longitudinal front side $\mathbf{90_1}$ of the top frame **90**. A rail **145**, called the upper rail, is provided with a « C » shaped prismatic transverse section and acts as a guide support for a roller device **146**, such as a wheel. Said roller device **146** is connected to a tab **147** installed around a pivot **148** in the top part of the first mobile panel **120**, at its free vertical end $\mathbf{120_1}$. The first mobile panel **120** is also equipped with a guide device **149** supported by a tab **150**,

installed on a pivot **151** in the bottom part of the first mobile panel **120**, at its free vertical end $\mathbf{120_1}$. The guide device **149** is installed inside a rail **153**, called the lower rail, supported by a longitudinal edge **7** of the lower frame **5** and with a « U » shaped prismatic transverse section.

Therefore in the above description, the first mobile panel **120** is suspended from the upper rail **145**, while the lower rail **153** cooperating with the guide device **149** prevents rotation of the first mobile panel **120**. Obviously, it would be possible to invert the position of the roller device **146** and the guide device **149** or to use two roller devices for support and guidance of the first mobile panel **120**.

The first mobile panel **120** is installed hinged at its vertical end $\mathbf{120_2}$, opposite the free vertical end $\mathbf{120_1}$, by hinges **160** on a side of the second mobile panel **121** which is also installed hinged on the chassis **110** at its opposite side by hinges **161**. Therefore the second mobile panel **121** is installed hinged at one end to the chassis **110** along a vertical direction passing through the axes **161**, and at the other end to the first mobile panel **120** also along a vertical direction passing through the hinges **160**.

As is clear from the above description, the mobile panels **120** and **121** can close the opening when they are in the deployed position. In said position, the front walls of the panels **120**, **121** are positioned in line with each other and are facing outwards from the machine. When work has to be done on the machine **1**, the door **101** is opened by pulling on at least one handle **164** placed for example on the second mobile panel **121**, so as to fold the two mobile panels **120**, **121** so that the first mobile panel **120** is folded in contact with the second mobile panel with their inner faces or bottom facing each other. In said position, the mobile panels **120**, **121** are approximately perpendicular to the opening with the façade **124** of the first mobile panel **120** turned or oriented towards the opening **111**. The door is moved from its open position to its closed position by taking the opposite steps, for example applying a tension force on the first mobile panel **120** starting from a handle **164** to make it move along the guide rails **145**, **153**.

**Fig. 9** and **10** illustrate another variant of embodiment of the sliding and pivoting guide means **140** for an access door **101** comprising a single mobile panel **120**. According to said variant of embodiment, the guide means **140** are composed of at least one and preferably two support and guide rails **145**, **153** as described

above, for rolling devices **146**, **149** respectively installed on pivots **170** on a vertical end $\mathbf{120_1}$ of the mobile panel **120**. The other vertical end $\mathbf{120_2}$ of the mobile panel **120** is connected by pivots **176** at its top and its bottom, to two extension bars **175** each guided in translation in a slide **178** fixed along a direction approximately perpendicular to the opening **111**.

A tension force on the mobile panel **120** makes the roller devices **146**, **149** slide on the rails **145**, **153**, simultaneously making the extension bar **175** extend so that the mobile panel **120** can be pivoted so that at the end of its movement distance, it is approximately perpendicular to the opening **111**. The opening **111** is closed by making a movement of the mobile panel **120** in the inverse direction.

In the preferred embodiment described above, the reception structure displacement means **122** are composed of door displacement guide means so that the man-machine interface **123** can be positioned such that the façade is accessible equally well in the open and closed positions of the door. Note that the reception structure displacement means **122** may consist of reception structure pivoting means **122** such that the façade of the man-machine interface **123** is accessible in the closed and open positions of the mobile panel. In other words, these pivoting means provide a means of moving the façade of the man-machine interface **123** to the back of the mobile panel **120** in the open position of the mobile panel, so that the façade is facing the opening **111**.

As will be clear from the above description, the displacement guide means are adapted so as to bring the façade of the man-machine interface **123**, in the open position, into a position allowing access to the opening **111** and to the man-machine interface **123**. In the open position, the mobile panel **120** is located laterally or on the side of the opening **111**. In the example shown, the movement guide means enable the façade of the man-machine interface **123** to move into a plane approximately perpendicular to the plane delimited by the opening **111**, when the mobile panel **120** is in the open position. In other words, these displacement means enable the façade of the man-machine interface **123** to move into a plane forming an angle with the plane delimited by the opening **111** equal to between 40° and 135°, and preferably between 60° and 110°, when the mobile panel in the open position.

Advantageously, the mobile panel **120** is locked in its open and close positions by any appropriate means.